Far Term Research Needs Team

Gerald J. Chomos

Paul C. Kelleher

David Matolak

Matthias Budil

Roger Herron

Mohammed Shamma

Stephane Mondoloni

Art Feinberg

Mike Ball

Chris Wargo

Group Approach

- Brainstorm Issue Needs

- Review and Assessment

- Ranking

- NASA Program Allocation

Far Term definition equals 10+10+ years

Far Term Research Needs

- 1. Impact on Aviation Profitability {n-l}
  - A.   Wireless in the US vs. others with Wireless (overcome legacy infrastructure)
  - B.   the rest of the world won't wait
  - C.   U.S. GNP adversely affected with loss of leadership
- 2. Continue drive for Global Aviation Communication Standards & Coverage (over oceans etc.) {b-h}
- 3. Commoditized Aerospace Mechanisms (reference M.Ball & D. Witchy presentations)- {c-h}
- 4. Better High Speed Data Communication Links {s-h}
- 5. Multi-functional Data link (APC, AAC, AOC, ATS, & ATC)- {c-m}

Far Term Research Needs

- 6. Dynamic Frequency Allocation (unbounded by regulatory allocations) {c-m}
  - A. Time-based
  - B. Spatial-based
- 7. Security/Vulnerability {s-h}
  - * CDMA- e.g: to enhance anti-jam
- 8. Enhanced CNS Traffic Model (to allow for faster comparison of proposals)- {c-m}
- 9. Sub-network Assessment Tools {c-h}
  - * Data open access
- 10. Harmonization on Internet Protocol {c-h}
- 11. Enhance Safety Improvements Based on digital communications {s-m}
- 12. Tools to allow dropping-fixed route structure {c-m}

Far Term Research Needs

- 13. System Design based upon Object Changes {c-m}
- 14. Automatic/Collaborative {c-m}
  - * Intermodal Dynamic Sizing self-organized schedule
- 15. Capacity equal VFR for all conditions {b-h}
- 16. Network Ground Infrastructure {s-l}
  - * Improvement- Hybrid
- 17. Losing ground situational awareness {s-h}
  - A. High situational awareness on ground through synthetic vision
  - B. Cameras around plane
  - C. IR Engines
- 18. Human Factors- Cross all voice to data to Multi-media transition {s-h}
- 19. Mobile within mobile "wireless use on board" {c-l}

Far Term Research Needs

20. Ultra wideband- {c-m}

- 21. Airborne Internet {s-m}

- 22. Aircraft Sensor {b-m}
  - * Generation, fusion and distribution of aircraft sensing information, e.g., weather

- 23. Appoint a NAS program manager {b-h}

Legend
c= Capacity
s= Safety
b= Both
l= Low
m= Medium
h=High